

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A wireless communication system for communicating transmission data comprising:

a transmitter configured to generate and to transmit a signal including

a physical layer header section; and

a data section,

the transmitter configured to generate a scrambling initial value using at least a part of the physical layer header section, the transmitter configured to count a number of logics "1" and a number of logics "0" in said part of the physical layer header section, the transmitter configured to generate the scrambling initial value based on the number of logics "1" and the number of logics "0" in said part of the physical layer header section, the transmitter configured to scramble the data section using the scrambling initial value, the transmitter configured to transmit the physical layer header section using a first modulation method and a first encoding rate with a first signal to noise ratio, the transmitter configured to transmit the data section using a second modulation method and a second encoding rate with a second signal to noise ratio, the first signal to noise ratio being less than the second signal to noise ratio; and

a receiver configured to receive a signal from the transmitter, the receiver generating a descrambling initial value using at least a part of the physical layer header section, the receiver descrambling the data section using the descrambling initial value.

Claims 2-16 (Canceled):

Claim 17 (Currently Amended): A wireless communication apparatus for communicating transmission data made up of a physical layer header section and a data section, said apparatus comprising:

communication means for transmitting/receiving transmission data over a communication channel, the communication means generating and transmitting a signal including

a physical layer header section; and

a data section including the transmission data,

the communication means transmitting the physical layer header section using a first modulation method and a first encoding rate with a first signal to noise ratio, the communication means transmitting the data section using a second modulation method and a second encoding rate with a second signal to noise ratio, the first signal to noise ratio being less than the second signal to noise ratio;

scrambling/descrambling initial-value generating means for generating an initial value when scrambling or descrambling using at least a part of the physical layer header section, the scrambling/descrambling initial-value generating means counting a number of logics "1" and a number of logics "0" in said part of the physical layer header section and generating the initial value based on the number of logics "1" and the number of logics "0" in said part of the physical layer header section; and

scrambling/descrambling means for performing scrambling or descrambling of the data section using said initial value.

Claim 18 (Original): The wireless communication apparatus according to claim 17, wherein said scrambling/descrambling means generate a transmission signal sequence scrambled by calculating an exclusive-OR operation between a scrambled sequence

generated from a scrambling initial value and a transmission data sequence, or descramble a reception data sequence by calculating an exclusive-OR operation between a descrambled sequence generated from a descrambling initial value and a reception signal sequence scrambled.

Claim 19 (Original): The wireless communication apparatus according to claim 17, wherein in the event that said initial value when scrambling/descrambling is n bits in length (wherein n is a natural number), said scrambling/descrambling initial-value generating means take an n-bit sequence obtained by extracting n bits from a physical layer header section or a part thereof based on a rule common with an other party of communication, as said initial value when scrambling/descrambling.

Claim 20 (Original): The wireless communication apparatus according to claim 19, wherein said scrambling/descrambling initial-value generating means generate said initial value when scrambling/descrambling by extracting n bits including fields of which all bits are not zero, of a physical layer header section.

Claim 21 (Original): The wireless communication apparatus according to claim 19, wherein said scrambling/descrambling initial-value generating means take a fixed n-bit sequence, which are not all zero bits, shared with an other party of communication as said initial value when scrambling/descrambling, in the event that n bits extracted from a physical layer header section are all zeroes.

Claim 22 (Original): The wireless communication apparatus according to claim 17, wherein in the event that said initial value when scrambling/descrambling is n bits in length

(wherein n is a natural number), said scrambling/descrambling initial-value generating means extract (n-k) bits from a physical layer header section or a part thereof based on a rule common with an other party of communication (wherein k is a natural number smaller than n), and insert a k-bit sequence such that at least 1 bit thereof includes logic "1", shared with the other party of communication in the extracted bit sequence of said (n-k) bits in a pattern shared with the other party of communication, and generate said initial value when scrambling/descrambling.

Claim 23 (Original): The wireless communication apparatus according to claim 17, wherein in the event that said initial value when scrambling/descrambling is n bits in length (wherein n is a natural number), said scrambling/descrambling initial-value generating means count the number of logics "1" in said physical layer header section or a part thereof, represent the number thereof with n bits in binary, and take this as said initial value when scrambling/descrambling.

Claim 24 (Original): The wireless communication apparatus according to claim 23, wherein in the event that the number of logics "1" counted in said physical layer header section or a part thereof is zero, said scrambling/descrambling initial-value generating means take a fixed n-bit sequence, which are not all zero bits, shared with an other party of communication as said initial value when scrambling/descrambling.

Claim 25 (Original): The wireless communication apparatus according to claim 17, wherein in the event that said initial value when scrambling/descrambling is n bits in length (wherein n is a natural number), said scrambling/descrambling initial-value generating means count the number of logics "1" in said physical layer header section or a part thereof,

represent the number thereof with $(n-m)$ bits in binary (wherein m is a natural number smaller than n), and insert an m -bit sequence such that at least 1 bit thereof includes logic "1", shared with an other party of communication in the extracted bit sequence of said $(n-m)$ bits in a pattern shared with the other party of communication, and generate said initial value when scrambling/descrambling.

Claim 26 (Original): The wireless communication apparatus according to claim 17, wherein in the event that said initial value when scrambling/descrambling is n bits in length (wherein n is a natural number), said scrambling/descrambling initial-value generating means count the number of logics "1" in said physical layer header section or a part thereof, add x shared with an other party of communication (wherein x is a natural number smaller than $2n$) to the number thereof, represent the result with n bits in binary, and take this bit sequence as said initial value when scrambling/descrambling.

Claim 27 (Original): The wireless communication apparatus according to claim 17, wherein in the event that said initial value when scrambling/descrambling is n bits in length (wherein n is a natural number), said scrambling/descrambling initial-value generating means count the number of logics "0" in said physical layer header section or a part thereof, represent the number thereof with n bits in binary, and take this as said initial value when scrambling/descrambling.

Claim 28 (Original): The wireless communication apparatus according to claim 17, wherein in the event that the number of logics "0" counted in said physical layer header section or a part thereof is zero, said scrambling/descrambling initial-value generating means

take a fixed n-bit sequence, which are not all zero bits, shared with an other party of communication as said initial value when scrambling/descrambling.

Claim 29 (Original): The wireless communication apparatus according to claim 17, wherein in the event that said initial value when scrambling/descrambling is n bits in length (wherein n is a natural number), said scrambling/descrambling initial-value generating means count the number of logics "0" in said physical layer header section or a part thereof, represent the number thereof with $(n-m)$ bits in binary (wherein h is a natural number smaller than n), insert an h-bit sequence such that at least one bit thereof is logic "1", shared with an other party of communication in the extracted bit sequence of said $(n-h)$ bits in a pattern shared with the other party of communication, and generate said initial value when scrambling/descrambling.

Claim 30 (Original): The wireless communication apparatus according to claim 17, wherein in the event that said initial value when scrambling/descrambling is n bits in length (wherein n is a natural number), said scrambling/descrambling initial-value generating means count the number of logics "0" in said physical layer header section or a part thereof, add y shared with an other party of communication (wherein y is a natural number smaller than $2n$) to the number thereof, represent the result with n bits in binary, and take this bit sequence as said initial value when scrambling/descrambling.

Claim 31 (Previously Presented): A wireless communication apparatus for communicating transmission data made up of a physical layer header section and a data section, said apparatus comprising:

communication means for transmitting/receiving transmission data over a communication channel;

scrambling/descrambling initial-value generating means for generating an initial value when scrambling or descrambling using at least a part of a physical layer header section; and

scrambling/descrambling means for performing scrambling or descrambling of a data section using said initial value,

wherein in the event that said initial value when scrambling/descrambling is n bits in length (wherein n is a natural number), said scrambling/descrambling initial-value generating means count the number of logics "1" and the number of logics "0" in said physical layer header section or a part thereof respectively, and represent the absolute value of the difference thereof with n bits in binary, and take this as said initial value when scrambling/descrambling.

Claim 32 (Original): The wireless communication apparatus according to claim 31, wherein in the event that the difference between the number of logics "1" and the number of logics "0" in said physical layer header section or a part thereof is zero, said scrambling/descrambling initial-value generating means take a fixed n -bit sequence, which are not all zero bits, shared with an other party of communication as said initial value when scrambling/descrambling.

Claim 33 (Previously Presented): A wireless communication apparatus for communicating transmission data made up of a physical layer header section and a data section, said apparatus comprising:

communication means for transmitting/receiving transmission data over a communication channel;

scrambling/descrambling initial-value generating means for generating an initial value when scrambling or descrambling using at least a part of a physical layer header section; and scrambling/descrambling means for performing scrambling or descrambling of a data section using said initial value,

wherein in the event that said initial value when scrambling/descrambling is n bits in length (wherein n is a natural number), said scrambling/descrambling initial-value generating means count the number of logics "1" and the number of logics "0" in said physical layer header section or a part thereof respectively, represent the absolute value of the difference thereof with (n-i) bits in binary, insert an i-bit sequence such that at least one bit thereof is logic "1", shared with an other party of communication in the extracted bit sequence of said (n-i) bits in a pattern shared with the other party of communication, and generate said initial value when scrambling/descrambling.

Claim 34 (Previously Presented): A wireless communication apparatus for communicating transmission data made up of a physical layer header section and a data section, said apparatus comprising:

communication means for transmitting/receiving transmission data over a communication channel;

scrambling/descrambling initial-value generating means for generating an initial value when scrambling or descrambling using at least a part of a physical layer header section; and scrambling/descrambling means for performing scrambling or descrambling of a data section using said initial value,

wherein in the event that said initial value when scrambling/descrambling is n bits in length (wherein n is a natural number), said scrambling/descrambling initial-value generating means count the number of logics "1" and the number of logics "0" in said physical layer

header section or a part thereof respectively, obtain the absolute value of the difference thereof, add z shared with an other party of communication (wherein z is a natural number smaller than $2n$) to the absolute value, represent the result with z bits in binary, and take this bit sequence as said initial value when scrambling/descrambling.

Claims 35-42 (Canceled).

Claim 43 (Currently Amended): A processing method for processing transmission packets, said method comprising:

generating a physical layer header of a transmission packet;
inverting a parity signal in said physical layer header, and setting predetermined data included in said physical layer header as an initial value in the internal state of said scrambler, in the event of indicating that an initial value should be set in said internal state, the inverting including counting a number of logics "1" and a number of logics "0" in said part of the physical layer header section and generating the initial value based on the number of logics "1" and the number of logics "0" in said part of the physical layer header section;
and

subjecting a signal to be processed in said transmission packet to a predetermined arithmetic operation according to the internal state of said scrambler, and outputting a processed transmission packet; and

transmitting the processed transmission packet over a communication channel using a transmitter, the transmitting including

transmitting the physical layer header section using a first modulation method and a first encoding rate with a first signal to noise ratio, and

transmitting the data section using a second modulation method and a second encoding rate with a second signal to noise ratio, the first signal to noise ratio being less than the second signal to noise ratio.

Claim 44 (Currently Amended): A processing method for processing reception packets by subjecting a signal to be processed in each reception packet to a predetermined arithmetic operation according to an internal state possessed by a descrambler, said method comprising:

receiving the reception packet over a communication channel using a receiver, the receiving including

receiving a physical layer header section of the reception packet which was transmitted using a first modulation method and a first encoding rate with a first signal to noise ratio, and

receiving a data section of the reception packet which was transmitted using a second modulation method and a second encoding rate with a second signal to noise ratio, the first signal to noise ratio being less than the second signal to noise ratio
analyzing the physical layer header of the reception packet;
setting the headmost data of said signal to be processed as an initial value in the internal state of said descrambler in the event that a normal value is set in a parity signal of said physical layer header as initial value setting information, the setting including counting a number of logics "1" and a number of logics "0" in said part of the physical layer header section and generating the initial value based on the number of logics "1" and the number of logics "0" in said part of the physical layer header section, and setting predetermined data included in said physical layer header other than said signal to be processed as the initial

value in the internal state of said descrambler in the event that an abnormal value is set in the parity signal of said physical layer header as said initial value setting information; and subjecting said signal to be processed to said predetermined arithmetic operation according to the internal state of said descrambler, and outputting a processed reception packet.

Claim 45 (Currently Amended): A wireless communication method for controlling communication operation of transmission data made up of a physical layer header section and a data section, said method comprising:

transmitting/receiving transmission data over a communication channel using a transmitter and a receiver, the transmitting including

generating and transmitting a signal including

a physical layer header section; and

a data section including the transmission data,

transmitting the physical layer header section using a first modulation method and a first encoding rate with a first signal to noise ratio, and

transmitting the data section using a second modulation method and a second encoding rate with a second signal to noise ratio, the first signal to noise ratio being less than the second signal to noise ratio;

generating an initial value when scrambling or descrambling using at least a part of the physical layer header section based on a rule common with an other party of communication, the generating including counting a number of logics "1" and a number of logics "0" in said part of the physical layer header section and generating the initial value based on the number of logics "1" and the number of logics "0" in said part of the physical layer header section; and

performing scrambling or descrambling of the data section using said initial value.

Claim 46 (Currently Amended): A non-transitory computer readable medium encoded with a computer program which is described in a computer-readable format so as to execute a method on a computer system based on initial value setting instructions indicating regarding whether or not an initial value should be set in an internal state possessed by a scrambler, said method comprising:

generating a physical layer header of a transmission packet;

inverting a parity signal in said physical layer header, and setting predetermined data included in said physical layer header as the initial value in the internal state of said scrambler, in the event of indicating that the initial value should be set in said internal state, the inverting including counting a number of logics "1" and a number of logics "0" in said part of the physical layer header section and generating the initial value based on the number of logics "1" and the number of logics "0" in said part of the physical layer header section; and

subjecting a signal to be processed in said transmission packet to a predetermined arithmetic operation according to the internal state of said scrambler, and outputting a processed transmission packet; and

transmitting the processed transmission packet over a communication channel, the transmitting including

transmitting the physical layer header section using a first modulation method and a first encoding rate with a first signal to noise ratio, and
transmitting the data section using a second modulation method and a second encoding rate with a second signal to noise ratio, the first signal to noise ratio being less than the second signal to noise ratio.

Claim 47 (Currently Amended): A non-transitory computer readable medium encoded with a computer program which is described in a computer-readable format so as to execute the processing of a method on a computer system, said method comprising:

receiving transmission data over a communication channel, the receiving including

receiving a signal including

a physical layer header section; and

a data section including the transmission data,

receiving the physical layer header section transmitted using a first modulation method and a first encoding rate with a first signal to noise ratio, and

receiving the data section using a second modulation method and a second encoding rate transmitted with a second signal to noise ratio, the first signal to noise ratio being less than the second signal to noise ratio;

analyzing the physical layer header of a reception packet;

setting the headmost data of said signal to be processed as an initial value in the internal state of said descrambler in the event that a normal value is set in a parity signal of said physical layer header as initial value setting information, the setting including counting a number of logics "1" and a number of logics "0" in said part of the physical layer header section and generating the initial value based on the number of logics "1" and the number of logics "0" in said part of the physical layer header section, and setting predetermined data included in said physical layer header other than said signal to be processed as the initial value in the internal state of said descrambler in the event that an abnormal value is set in the parity signal of said physical layer header as said initial value setting information; and

subjecting said signal to be processed to said predetermined arithmetic operation according to the internal state of said descrambler, and outputting this.

Claim 48 (Currently Amended): A non-transitory computer readable medium encoded with a computer program which is described in a computer-readable format so as to execute a method of communication operation of transmission data on a computer system, said method comprising:

transmitting/receiving transmission data over a communication channel, the transmitting including

generating and transmitting a signal including

a physical layer header section; and

a data section including the transmission data,

transmitting the physical layer header section using a first modulation method and a first encoding rate with a first signal to noise ratio, and

transmitting the data section using a second modulation method and a second encoding rate with a second signal to noise ratio, the first signal to noise ratio being less than the second signal to noise ratio;

generating an initial value when scrambling or descrambling using at least a part of the physical layer header section based on a rule common with an other party of communication, the generating including counting a number of logics "1" and a number of logics "0" in said part of the physical layer header section and generating the initial value based on the number of logics "1" and the number of logics "0" in said part of the physical layer header section; and

performing scrambling or descrambling of the data section using said initial value.

Claims 49-50 (Canceled).

Claim 51 (New): The wireless communication system according to claim 1, wherein in the event that said initial value when scrambling/descrambling is n bits in length (wherein n is a natural number), said transmitter counts the number of logics "1" in said physical layer header section or the part thereof, represents the number thereof with n bits in binary, and uses the number as said initial value when scrambling/descrambling.